

**FIRST FIVE-YEAR REVIEW REPORT FOR  
PETERS CARTRIDGE FACTORY SUPERFUND SITE  
WARREN COUNTY, OHIO**



**Prepared by**

**U.S. Environmental Protection Agency  
Region 5  
CHICAGO, ILLINOIS**

3/16/2020

**X** A handwritten signature in black ink, appearing to read "Douglas Ballotti".

---

Douglas Ballotti, Director  
Superfund & Emergency Management Division  
Signed by: DOUGLAS BALLOTTI

## Table of Contents

LIST OF ABBREVIATIONS & ACRONYMS .....	3
I. INTRODUCTION .....	4
Site Background.....	4
FIVE-YEAR REVIEW SUMMARY FORM.....	5
II. RESPONSE ACTION SUMMARY .....	5
Basis for Taking Action .....	5
Response Actions.....	7
Status of Implementation .....	9
Institutional Controls .....	10
Systems Operations/Operation & Maintenance.....	12
III. PROGRESS SINCE THE LAST REVIEW .....	12
IV. FIVE-YEAR REVIEW PROCESS .....	13
Community Notification, Involvement & Site Interviews.....	13
Data Review.....	13
Site Inspection.....	14
V. TECHNICAL ASSESSMENT .....	15
QUESTION A: Is the remedy functioning as intended by the decision documents? .....	15
QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection still valid? .....	15
QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy? .....	16
VI. ISSUES/RECOMMENDATIONS .....	16
Other Findings .....	17
VII. PROTECTIVENESS STATEMENT .....	17
VIII. NEXT REVIEW .....	17

## FIGURES

- Figure 1 – Site Map
- Figure 2 – High Lead Area Map
- Figure 3 – Groundwater Monitoring Well Location Map

## APPENDICES

- Appendix A – Site Ownership Map
- Appendix B – Reference List
- Appendix C – Site Inspection Checklist and Photos

## LIST OF ABBREVIATIONS & ACRONYMS

ARAR	applicable or relevant and appropriate requirement
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	Code of Federal Regulations
COC	contaminant of concern
DuPont	E.I. du Pont de Nemours and Company
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FPA	Former Process Area
FYR	five-year review
HI	hazard index
HTP	Hamilton Township Property
ICIAP	Institutional Control Implementation and Assurance Plan
ICs	institutional controls
LA	Lowlands Area
MCL	maximum contaminant level
mg/kg	milligrams/kilogram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	operation and maintenance
OEPA	Ohio Environmental Protection Agency
OU	operable unit
PRP	potentially responsible party
RA	remedial action
RAO	remedial action objectives
RD	remedial design
Remington	Remington Arms Company, Inc.
RI/FS	remedial investigation/feasibility study
ROD	Record of Decision
Site	Peters Cartridge Factory Superfund Site
SVOCs	semi-volatile organic compounds
UECA	Uniform Environmental Covenants Act
ug/L	micrograms per liter
UU/UE	unlimited use and unrestricted exposure
VAP	Voluntary Action Program

## **I. INTRODUCTION**

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The United States Environmental Protection Agency (EPA) prepared this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP)(40 C.F.R. Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the first FYR for the Peters Cartridge Factory Superfund Site (“Site”). The triggering action for this statutory review is the on-site construction start date of the operable unit (OU) #1 remedial action. The FYR has been prepared due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of one OU that addresses the soil remedy at the Site, and that OU is addressed in this FYR.

The Peters Cartridge Factory Superfund Site FYR was led by Demaree Collier, EPA Remedial Project Manager. Participants included Tamara McPeck, the Ohio Environmental Protection Agency (OEPA) project manager, EPA’s contractor AECOM, and Adrian Palomeque, EPA’s Community Involvement Coordinator. The potentially responsible parties (PRPs) and OEPA were notified of the initiation of the FYR, which began on 3/7/2019.

### **Site Background**

The Site consists of an approximately 71-acre parcel of land located along the southern bank of the Little Miami River in Warren County, Ohio, as shown in Figure 1. The Site is located at 1415 Grandin Road, Kings Mills, Ohio, 45039, in Hamilton Township. The Site is bordered on the north by the Little Miami River (designated as a State and National Scenic River), on the west by a United States Army Reserve Center, on the south by the Warren County Water District water treatment plant, and on the east by a natural area owned by the Ohio Department of Natural Resources. Residential and agricultural properties are located to the southeast.

From 1887 to 1934, the Peters Cartridge facility produced ordnance and shot shell ammunition. In 1934, the Remington Arms Company, Inc. (“Remington”) purchased the Peters Cartridge Company and continued the production of shot shell and cartridge ammunition at the facility. During the Second World War, Remington produced .30- and .45-caliber carbine ammunition for the U.S. Government. After 1944, operations at the facility were discontinued. Since 1944, the Site has been divided into multiple land parcels that have been owned and occupied by various non-ammunition-making entities.

During the remedial investigation/feasibility study (RI/FS), the Site was separated into three distinct areas: the Former Process Area (FPA), the Hamilton Township Property (HTP), and the Lowland Area (LA). The FPA is a 15-acre parcel of developed land containing six buildings, and encompasses the production portion of the Site where most of the manufacturing associated with the Peters Cartridge



processes took place. The HTP consists of a 56-acre parcel of unimproved wooded land located south and southwest of the FPA, and was used primarily to store finished munitions manufactured at the Site. The LA lies at the northern edge of the Site within the Little Miami River floodplain and along the southern border of the Little Miami River Scenic Trail, a historical railroad right-of-way that was redeveloped as a bike and walking path. The LA includes some historical manufacturing areas used in the production processes.

### **FIVE-YEAR REVIEW SUMMARY FORM**

SITE IDENTIFICATION		
<b>Site Name:</b> Peters Cartridge Factory Superfund Site		
<b>EPA ID:</b> OHD987051083		
<b>Region:</b> 5	<b>State:</b> OH	<b>City/County:</b> Kings Mills, Warren County
SITE STATUS		
<b>NPL Status:</b> Final		
<b>Multiple OUs?</b> No	<b>Has the Site achieved construction completion?</b> Yes	
REVIEW STATUS		
<b>Lead agency:</b> EPA		
<b>Author name (Federal or State Project Manager):</b> Demaree Collier		
<b>Author affiliation:</b> EPA		
<b>Review period:</b> 3/7/2019 - 10/11/2019		
<b>Date of Site inspection:</b> 9/25/2019		
<b>Type of review:</b> Statutory		
<b>Review number:</b> 1		
<b>Triggering action date:</b> 3/16/2015		
<b>Due date (<i>five years after triggering action date</i>):</b> 3/16/2020		

## **II. RESPONSE ACTION SUMMARY**

### **Basis for Taking Action**

In 1992, OEPA noted the release of possible hazardous substances in the soil at the Site. OEPA conducted a preliminary assessment in 1993 and then brought the Site to the attention of EPA. Subsequently, OEPA conducted several Site screening investigations/evaluations between 1994 and 1999. During these investigations, soil, sediment, and groundwater samples were analyzed for volatile organic compounds, semi-volatile organic compounds (SVOCs), pesticides, and metals. Some SVOCs

and pesticides were detected in sediment samples from the Little Miami River, but these compounds were not detected in soils or sediment samples from the Site and likely were not Site-related. The investigations conducted in the 1990s concluded that the Site had been impacted by copper, lead, and mercury, all of which are associated with the former munitions manufacturing operations, and that the impacts appeared to be generally confined to surface soils in the former manufacturing and storage areas in the FPA.

The Human Health Risk Assessment indicated that there are no unacceptable cancer or non-cancer human health risks under current or future land use scenarios for the Little Miami River Scenic Trail in the LA. However, average levels of lead in LA surface soil exceeded acceptable levels for relevant receptors (e.g., utility workers and recreators). Potential unacceptable cancer and non-cancer risks were identified for several current and future receptors based on exposure to surface soil and subsurface soil at the FPA and surface soil/swale soil at the HTP. In addition, average lead concentrations in surface soil exceeded acceptable levels for current/future receptors in the FPA and HTP. Cancer risks at the Site were generally driven by arsenic and benzo(a)pyrene; non-cancer risks were generally driven by arsenic and antimony. Areas of unacceptable risks were primarily associated with the FPA. Table 1 shows the areas of the Site, potential receptors, media, and contaminants of concern (COCs) that posed potential unacceptable risks at the Site.

**Table 1. Summary of Areas, Receptors, Media and COCs Posing Unacceptable Risks**

Area	Receptor	Media	COC(s)
Former Process Area	Commercial/ Industrial Worker	Surface Soil (0-2 feet below ground surface [bgs])	Arsenic, Benzo(a)pyrene, Naphthalene, Lead
Lowland Area	Child/ Adult Recreator	Surface Soil (0-2 feet bgs)	Lead
Hamilton Township Property	Child/ Adult Recreator	Surface Soil (0-2 feet bgs)	Antimony, Arsenic, Benzo(a)pyrene, Lead
Terrestrial Habitats	Ecological Receptors	Surface Soil (0-2 feet bgs)	Antimony, Arsenic, Cadmium, Copper, Lead, Mercury, Nickel, Selenium, Thallium, Zinc

Under current conditions, shallow groundwater is not used on-Site for potable or industrial uses, including irrigation. In addition, shallow groundwater is at a depth where direct contact during intrusive activities would likely not occur. As a result, the potential for human exposure to shallow groundwater is limited. Cumulative non-cancer risk estimates for groundwater for Site-related contaminants are below a threshold hazard index (HI) of 1.

Based on the evaluation in the Baseline Ecological Risk Assessment, COCs with complete exposure pathways were identified for terrestrial invertebrates exposed directly to Site-related contaminants in soil or swale soil. (See Table 1). Complete exposure pathways also included terrestrial invertebrates, herbivores, and carnivores exposed directly or through food-chain exposures in the three terrestrial habitat exposure areas including the FPA, LA, and HTP. Species representing these potential receptors include earthworms, meadow vole, northern short-tailed shrew, and American kestrel.

## **Response Actions**

EPA proposed the Site to the National Priorities List (NPL) in April 2003. Under a July 7, 2004 Administrative Order on Consent between EPA and the PRPs, the PRPs completed an RI/FS that investigated the nature and extent of contamination at the Site and evaluated potential remedial alternatives for addressing the risks posed by the Site. EPA issued a Record of Decision (ROD) on September 28, 2009, which specified the selected remedial action for the Site, which consisted primarily of excavation and on-Site consolidation of contaminated soil.

After unsuccessful negotiations with the PRPs, EPA issued a Unilateral Administrative Order on March 30, 2012 to one of the PRPs – the lead PRP, E.I. du Pont de Nemours and Company (“DuPont”) – for the remedial design (RD) and remedial action (RA) work required by the ROD. EPA then finalized the Site on the NPL on September 8, 2012. DuPont conducted a Pre-Design Investigation in 2012-2013, including delineating areas of the Site with high lead concentrations in soils. EPA issued an Explanation of Significant Differences (ESD) in 2015 to document significant changes to the remedy selected in the ROD because lead with concentrations considered to be hazardous waste was discovered and required on-Site treatment before being placed into the on-Site consolidation cell. Table 2 shows the selected cleanup levels for soil, and Figure 2 illustrates the areas where hazardous levels of lead were found in soil at the Site.

**Table 2. Cleanup Levels for Soil**

Former Process Area – soil for Site Worker Scenario	
○ Lead	○ 800 milligrams per kilogram (mg/kg)
○ Arsenic	○ 20.57 mg/kg
○ Benzo(a)pyrene*	○ 2.1 mg/kg
○ Naphthalene	○ 137 mg/kg
Lowland Area – soil for Recreational User Scenario	
○ Lead	○ 400 mg/kg
Hamilton Township Property – soil for Recreational User Scenario	
○ Lead	○ 400 mg/kg
○ Antimony	○ 225 mg/kg
○ Arsenic	○ 20.57 mg/kg
○ Benzo(a)pyrene*	○ 0.25 mg/kg

\* Carcinogenic polyaromatic hydrocarbons are represented by benzo(a)pyrene toxicity equivalency quotient.

Groundwater at the Site is not considered to be a significant migration pathway for Site-related contaminants. Groundwater flow through the Site is limited, and no contaminants were detected in downgradient monitoring wells located between the Site and the Little Miami River during the RI. As noted earlier, shallow groundwater currently is not used on-Site for potable or industrial uses, including irrigation. The target-organ non-cancer hazard indices for Site-related COCs in groundwater are below the EPA threshold HI of 1. However, there are potential carcinogenic risks which are driven by detections of arsenic at levels below the federal maximum contaminant level (MCL), and arsenic is monitored to compare against the MCL. Therefore institutional controls (ICs) for groundwater were required as part of the selected remedy for the Site to prevent ingestion exposures by a future resident.

## Remedial Action Objectives for Selected Remedy – 2009 ROD and 2015 ESD

The remedial action objectives (RAOs) for the Site, as stated in the ROD, remained unchanged by the ESD. The RAOs for the Site are as follows:

- Prevent ingestion exposures by a future resident with groundwater used as a domestic water supply having an arsenic concentration that exceeds its MCL.
- Prevent direct human exposure to surface/swale soil having COC concentrations which result in cumulative excess cancer risk greater than  $1 \times 10^{-4}$  or a non-cancer HI greater than 1.
- Prevent direct human exposure to surface and subsurface soil with lead concentrations greater than EPA's residential standard (i.e., 400 mg/kg) or if an IC restricts residential development, prevent human exposure to surface/swale soil with lead concentrations greater than EPA's commercial standard (i.e., 800 mg/kg).
- Prevent ecological receptor exposures to on-Site surface soil/swale soil with copper, lead, and mercury concentrations creating unacceptable levels of risk.
- Prevent exposure of aquatic receptors to contaminants of ecological concern (metals and benzo(a)pyrene) in the Little Miami River by limiting migration of Site-related contaminants in depositional material in the channelized outfalls and deltas bordering the Little Miami River.

## Remedy Components of 2009 ROD

The major components of the remedy selected in the ROD were as follows:

- Excavate surface soil in the FPA to a depth of at least two feet bgs in areas that exceed the EPA commercial standard for lead of 800 milligrams per kilogram (mg/kg), and excavate surface soil in the LA and on the HTP to a depth of at least two feet bgs in areas that exceed the EPA residential standard for lead of 400 mg/kg. The actual areas to be excavated and depths will be determined and evaluated during the RD. The excavated areas will be backfilled with clean fill material to the existing grade.
- Clean out and remove debris and erosional material at drainage culvert and outfall areas. Excavate three identified shoreline sediment areas to a depth of approximately six inches and backfill the shoreline sediment areas with clean fill material.
- Consolidate impacted soil, sediment, and erosional material in an on-site consolidation cell. The cell will be constructed with an impermeable composite liner and cap system developed to be consistent with state regulations. A flexible membrane liner with a geotextile cushion will be installed as the main component of the cell liner system.
- Cap the cell with a composite cap system consisting of a six-inch-thick vegetative support layer, a two-foot-thick layer of compacted low-permeability clay, a geocomposite drainage layer, a flexible geomembrane, and a low-permeability clay layer beneath the geomembrane. The final cap design will be developed to be compliant with state regulations during the RD phase of the project. During the RD phase it will be determined whether an access restriction will be required based on future use of the area.
- Monitor groundwater to ensure that there is no migration of contaminants from the cell.
- ICs in the form of deed restrictions will be required on all parcels to accomplish the following: restrict land use to nonresidential purposes; limit future site activities to prevent intrusive

activities that could compromise the cell; and restrict on-site groundwater use to prevent ingestion exposures by a future resident with groundwater used as a domestic water supply.

### Remedy Components Modified by the 2015 ESD

The modifications to the remedy documented in the ESD addressed three main issues: (1) soil with concentrations of lead considered to be hazardous waste; (2) ICs; and (3) a waiver from an applicable or relevant and appropriate requirement (ARAR). The modifications to the remedy described in the ESD are summarized as follows:

- All lead-contaminated soils with concentrations of lead considered to be characteristically hazardous will be excavated, regardless of depth, and stabilized on-Site to render them non-hazardous prior to placing the excavated soils in the on-Site consolidation cell.
- An Institutional Control Implementation and Assurance Plan (ICIAP) is required as part of the remedy. An ICIAP establishes and documents the activities associated with implementing and ensuring the long-term stewardship of the ICs that are required by the selected remedy, and to specify the persons and/or organizations that are responsible for conducting those activities.
- A waiver from an ARAR is explained. The waiver allows for a minimum final slope of 2.0 percent for the composite cap system instead of the minimum 5.0 percent grade required by an ARAR in a State of Ohio regulation, Ohio Administrative Code 3745-29-08(C)(4)(c), that deals with construction of industrial solid waste facilities.

### Status of Implementation

EPA approved the PRP's RD in December 2014. The PRP's contractors mobilized to the Site for the start of RA construction work in mid-March 2015, and the Site achieved construction completion on September 16, 2016. The RA construction activities included the following:

- Site clearing of trees from excavation areas, consolidation cell area, on-Site borrow area, staging area, and access roads;
- Cleaning out and removing debris and erosional material at drainage culvert and outfall areas;
- Excavation of contaminated soil and shoreline sediments exceeding cleanup standards to the depths determined during RD;
- Testing of soils to determine if characteristically hazardous;
- Treating via stabilization the lead-contaminated soils found to be hazardous, to render the soils non-hazardous and placed within the cell;
- Consolidating excavated soil, sediment, and erosional material in an on-Site consolidation cell, with cell components (i.e., cell liner and cap system) constructed in accordance with the design specifications;
- Backfilling the excavation areas with clean soil from borrow sources;
- Installing permanent surface water controls and both temporary and permanent erosion controls; and
- Reseeding, regrading and stabilization of areas across the Site impacted by the construction work.

After the Site was considered construction complete, the owners of the FPA wanted to redevelop the area for commercial/residential use and requested that the FPA be deleted from the NPL. All necessary ICs were put in place for the FPA, and the FPA was deleted on September 26, 2018 through a partial deletion. The FPA is currently zoned industrial/commercial and the ICs have been implemented to reflect that. EPA's Brownfields program and Superfund program, in consultation with OEPA, determined that the redevelopers of the FPA could work through the Ohio Voluntary Action Program (VAP) to perform the additional cleanup work that would be necessary for redevelopment of the FPA for commercial and residential uses. The owners and EPA then worked to transition the FPA to the Ohio VAP, in order for that state program to address and oversee any additional cleanup work required to meet residential standards. It is anticipated that the FPA will be rezoned for commercial/residential uses upon completion of the additional cleanup work conducted under the Ohio VAP. The additional cleanup work will need to achieve EPA's residential cleanup standards, and EPA will need to document a remedy change in a new decision document as well as ensure that the ICs for the FPA are appropriately revised.

Although ICs are currently in place for the FPA, ICs still need to be implemented for the other areas of the Site. EPA is working with the owners of those other Site parcels to implement ICs for each parcel. The PRP, DuPont, first attempted to get all necessary ICs in place but ended up requesting EPA's assistance with this process.

### **Institutional Controls**

ICs in the form of deed restrictions are required by the decision documents to restrict property use, maintain the integrity of the remedy, and assure the long-term protectiveness for areas which do not allow for UU/UE. The PRP submitted an ICIAP for the Site and EPA approved the ICIAP in September 2018. A summary of the implemented and planned ICs for the Site is provided in Table 3 and further discussed below.

**Table 3: Summary of Planned and/or Implemented ICs**

<b>Media, engineered controls, and areas that do not support UU/UE based on current conditions</b>	<b>ICs Needed</b>	<b>ICs Called for in the Decision Documents</b>	<b>Impacted Parcel(s)</b>	<b>IC Objective</b>	<b>Title of IC Instrument Implemented and Date (or planned)</b>
Soil	Yes	Yes	Former Process Area (currently commercial use)	Soil Management Requirements; Land Use Restrictions	Environmental Covenant pursuant to Ohio Uniform Environmental Covenants Act (UECA) – recorded 1/24/2018
Groundwater	Yes	Yes	Former Process Area (currently commercial use)	Land Use Restrictions; Groundwater Extraction or Use Prohibition	Environmental Covenant pursuant to Ohio UECA – recorded 1/24/18

Soil	Yes	Yes	Consolidation Cell (within the Hamilton Township Property)	Land Use Restrictions; Consolidation Cell Restrictions	Environmental Covenant (planned)
Groundwater	Yes	Yes	Consolidation Cell (within the Hamilton Township Property)	Groundwater Extraction or Use Prohibition; Land Use Restrictions	Environmental Covenant (planned)
Soil	Yes	Yes	Lowland Area	Soil Management Requirements; Land Use Restrictions	Environmental Covenant (planned)
Groundwater	Yes	Yes	Lowland Area	Land Use Restrictions; Groundwater Extraction or Use Prohibition	Environmental Covenant (planned)
Soil	Yes	Yes	Hamilton Township Property	Soil Management Requirements; Land Use Restrictions	Environmental Covenant (planned)
Groundwater	Yes	Yes	Hamilton Township Property	Land Use Restrictions; Groundwater Extraction or Use Prohibition	Environmental Covenant (planned)

A map showing the area in which the ICs apply and the environmental covenant for the FPA is included in Appendix A. This map shows Site ownership of the various parcels across the Site. All parcels within the Site require ICs.

Status of Access Restrictions and ICs: An environmental covenant for the FPA was recorded in 2018. The FPA is currently zoned industrial/commercial and the implemented ICs reflect that. The current owner has plans for redevelopment of the FPA for retail and residential uses. The FPA was transitioned to the Ohio VAP in order to perform the additional cleanup that is required in order to meet residential-use standards. It is anticipated that the FPA will be rezoned for commercial/residential uses upon completion of the additional cleanup work. The additional cleanup work will need to achieve EPA's residential standards, and EPA will need to document a remedy change in a new decision document as well as ensure that the ICs for the FPA are appropriate revised.

During the Site inspection, it was observed that the FPA is under heavy construction for the planned redevelopment. The owner stated that the 2017 Soil Management Plan was followed and that Ohio EPA will provide EPA with this document and all other relevant documents related to the additional work conducted under the Ohio VAP once a final report is received.

EPA is working with the five landowners of the remaining parcels within the Site in an attempt to implement an environmental covenant pursuant to the Ohio UECA for each parcel. The PRP, DuPont,

attempted to get all necessary ICs in place but ended up requesting EPA's assistance with this process. EPA created a "model" environmental covenant for each of the property owners to sign, once tailored for their respective parcels. Three of the landowners appear to be cooperative and willing to sign an environmental covenant, while two of the landowners have not been responsive. EPA will continue to work towards implementing environmental covenants at all the remaining parcels, but may need to implement informational controls (i.e., deed notices) for some of the parcels if unable to get environmental covenants implemented in a timely manner. In the event that informational controls are implemented at some parcels, EPA will continue to pursue environmental covenants for those parcels in the future.

Current Compliance: Currently, the owners are in compliance with the commercial IC standards at only the FPA. Work currently being performed at the FPA is being conducted according to the 2017 Soil Management Plan and is following all pertinent health and safety protocols. Although the required ICs for the other Site parcels have not been implemented, based on the Site inspection, there are currently no known uses of these parcels which would be considered inconsistent with the objectives to be achieved by the ICs.

IC Follow-up Actions Needed: Environmental covenants need to be completed and recorded for several Site parcels still requiring ICs.

Long-term Stewardship: Since compliance with ICs is necessary to assure the protectiveness of the remedy, planning for long-term stewardship is required to ensure that the ICs are maintained, monitored and enforced so that the remedy continues to function as intended. Long-term stewardship involves assuring effective procedures are in place to properly maintain and monitor the Site.

DuPont's 2017 Operation and Maintenance (O&M) Plan includes procedures to ensure long-term IC stewardship. These long-term stewardship procedures include Site reviews of the ICs, and annual IC reports with results of the inspection and review and certification to EPA that ICs remain in place and are effective across the entire Site. The latest report, submitted in 2018, shows the ICs for the FPA are in place and effective.

### **Systems Operations/Operation & Maintenance**

The PRP submits annual O&M reports based upon the approved 2017 O&M Plan. O&M at the Site includes inspecting the landfill cap, looking for any erosional areas across the Site, conducting groundwater monitoring, observing the vegetation across the Site to ensure growth is occurring, and ensuring the streambank protection measures remain in place. In the 2019 O&M Report (which summarizes activities from calendar year 2018), the only noted issue was the slope behind Building R-2 having severe erosion. This was repaired and during the FYR inspection looked very stable, with no erosional issues noticed. To date, no changes have been made to the original O&M Plan.

### **III. PROGRESS SINCE THE LAST REVIEW**

This is the first FYR for the Peters Cartridge Factory Superfund Site, so no previous reviews have been conducted.



## **IV. FIVE-YEAR REVIEW PROCESS**

### **Community Notification, Involvement & Site Interviews**

A public notice was made available by publication in the Journal News Pulse of Warren County, on 12/8/2019, stating that there was a FYR and inviting the public to submit any comments to EPA. No comments were received from the public, and there were no interviews conducted for this FYR. The results of the review and the final FYR report will be made available at the Site information repositories located at the Salem Township Library, 535 W. Pike Street, Morrow, Ohio, 45152, and the Warren County Administration Building, 406 Justice Drive, Lebanon, Ohio, 45036.

### **Data Review**

The Field Sampling Plan for Post Remedial Action Activities, July 2017, outlines the monitoring plan for groundwater at the Site following completion of the remedial action cleanup work at the Site. It is set up to ensure that contaminants from the cell are not migrating into the groundwater. The monitoring program was set up to require semi-annual groundwater monitoring for the first five years. After five years, if no impacts from the cell or from remedial activities are observed, sampling will be conducted annually. The monitoring well network is shown in Figure 3.

For purposes of this FYR, EPA reviewed all available groundwater data from 2013 (prior to the cleanup) through mid-2019. Specifically, data from the following sampling events was reviewed: January/ February 2013 (collected during the Pre-Design Investigation and summarized in the May 2013 Preliminary Design Report); October 2016 (collected shortly after the completion of construction, this data was not required to be collected, and is not summarized in any formal report); June 2017 and November/December 2017 (summarized in the February 2018 annual O&M report); June 2018 and December 2018 (summarized in the March 2019 annual O&M report); and June 2019 (not yet summarized in any formal report). The data from the second 2019 semi-annual groundwater monitoring event was not yet available when this FYR was prepared. The data from both 2019 sampling events will be summarized in an annual O&M report expected to be submitted in Spring 2020.

The groundwater data is screened against EPA's drinking water standards for all COCs. A review of the data trend that began before the Site was remediated shows no indication that the groundwater is being impacted by the consolidation cell. There has been no increase in COCs around the consolidation cell (wells MW-012 through MW-018) and no increase in other wells of residual impacts from excavation activities. The following is a summary of those results. The groundwater data itself can be found in the reports so noted in the Reference List in Appendix B.

### **Metals (Total)**

Groundwater sampling events completed from 2013 through mid-2019 reported concentrations of total metals above the screening criteria at MW-002, MW-005, and MW-009.

The concentration of total arsenic at MW-002 (which is within the footprint of the FPA) exceeded the screening criteria (i.e., the MCL) of 10 micrograms per liter (ug/L) in 2013 (15 ug/L), 2017 (11 ug/L and 16 ug/L) and 2018 (61 ug/L and 13 ug/L). (Note: MW-002 was not sampled during the June 2019 sampling event due to excavation activities surrounding this well.) Concentrations of total arsenic at this well have ranged from 11 ug/L to 61 ug/L, exhibiting no apparent trend.

The concentration of total lead at MW-005 exceeded the screening criteria of 15 ug/L in June 2019 (66 ug/L). The concentration of total lead at MW-009 exceeded the screening criteria of 15 ug/L in 2013 (25 ug/L).

No additional total metal exceedances were identified during sampling events completed since 2013. However, during the sampling events completed in 2016 and 2017, laboratory detection limits for total mercury were reported at concentrations above the applicable screening criteria in twelve or more monitoring wells during each event. The lab inadvertently was reporting mercury at a higher reporting limit for those two years (100 ug/L), however, the method detection limit was always set at 1.3 ug/L or lower, so anything above that was reported and then flagged. This has been resolved and the correct reporting limits are now being used.

### Metals (Dissolved)

Groundwater sampling events completed from 2013 through mid-2019 reported concentrations of dissolved arsenic above the screening criteria at MW-002. The concentration of dissolved arsenic at MW-002 equaled the screening criteria in 2013 (10 ug/L) and exceeded the screening criteria in 2017 (11 ug/L). (Note: MW-002 was not sampled during the June 2019 sampling event.) No additional dissolved metal exceedances were identified during sampling events completed since 2013.

### SVOCs

MW-016 is the only well reporting SVOC detections during sampling events completed since 2013, with three SVOCs exceeding the applicable screening criteria in 2013. However, during the 2017, 2018 and June 2019 sampling events, laboratory detection limits for all SVOCs were reported at concentrations above the applicable screening criteria in two or more monitoring wells during each event.

### Site Inspection

The inspection of the Site was conducted on 9/25/2019. In attendance were Demaree Collier, EPA; Tamara McPeck, OEPA; EPA's contractor; and the PRP's contractors from Parsons. The purpose of the inspection was to assess the protectiveness of the remedy.

During the Site inspection, the FPA was under heavy construction for redevelopment into future residential space and commercial space. All appropriate fencing and barriers were in place to prevent trespassers from accessing the area around the FPA. The cap was inspected and looked completely intact with vegetation growing across the surface. All of the areas where slight erosion had occurred over the past few winters had been repaired and no further erosion was observed. There were thousands of trees planted across various areas on non-capped surfaces of the Site where soil was removed. It was noted that there were several areas where it looked like the trees were not growing, but other types of vegetation were flourishing. This will be tracked during future Site inspections to see if additional growth is noted. The stream bank along the Little Miami River was stable and vegetation had reestablished itself. The site inspection checklist and photos are included as Appendix C.

## V. TECHNICAL ASSESSMENT

**QUESTION A:** Is the remedy functioning as intended by the decision documents?

### Question A Summary:

Yes. A review of the available information indicates that the remedy is functioning as intended by the decision documents. The consolidation cell is functioning as designed and no apparent intrusion was noted during the inspection of the cap. Soil cleanup levels have been achieved across the Site. Groundwater data evaluated pre- and post-construction of the cell indicate that no contamination is migrating from the containment cell. There are occasional groundwater exceedances of COCs above screening levels and arsenic occasionally can be found above its MCL at MW-002, but this had been occurring prior to installation of the cell and is not related to the cell itself. Further, groundwater at the Site is not considered to be a significant migration pathway for Site-related contaminants. Under current conditions, shallow groundwater is not used on-Site for potable or industrial uses, including irrigation. Monitoring of the cell and of the groundwater will continue per the approved O&M Plan to ensure that the remedy remains effective.

ICs in the form of an environmental covenant pursuant to the Ohio UECA are in place for the FPA and are functioning as intended. Additional cleanup work is occurring at the Site, under the review and oversight of the Ohio VAP, to allow for redevelopment of the FPA. All activities occurring at the FPA are following an approved Soil Management Plan. It is anticipated that once all work is completed at the FPA to the satisfaction of the Ohio VAP, and once EPA concurs that the FPA can be used for commercial/residential use, then the current IC will be revised to reflect this change.

Additional ICs are needed for the remaining parcels that comprise the Site. Environmental covenants have been drafted and are being pursued with the property owners. EPA may need to implement informational controls (i.e., deed notices) for some parcels where the property owners have not been responsive, but EPA will continue to pursue environmental covenants in the future even if informational controls are put in place.

**QUESTION B:** Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection still valid?

### Question B Summary:

Yes. The exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of remedy selection are still valid. No new exposure assumptions are needed at this time. There have been no major changes in the physical conditions of the Site that would affect the protectiveness of the remedy. However, there may be changes in the future to how EPA selects cleanup levels for lead at residential properties, as further discussed below.

As the remedial work at the Site has been completed, the ARARs cited in the ROD have been met. All federal and state requirements are being met. No new ARARs need to be considered at this time. However, EPA issued guidance entitled *Updated Scientific Considerations for Lead in Soil Cleanups* (OLEM Directive 9200.2-167, December 22, 2016), that highlighted the current science and risk assessment tools that EPA Regions may consider when addressing lead-contaminated soils at CERCLA Sites. Region 5 understands that EPA Headquarters is considering revising its national lead policy,

which could result in a lowering of the residential lead cleanup level that has been used at many different Superfund sites (including this Site). If Headquarters issues a revised lead policy, Region 5 would have to re-evaluate whether the remedy at this Site was still protective and whether any changes to the selected residential cleanup level for lead were needed. Any change to the Site's selected cleanup levels would be documented in an appropriate decision document.

The exposure pathways assumption applicable to current and future trespassers was effectively reduced by the removal of all contaminated soil below the required cleanup level stated in the ROD. There have been no changes in the toxicity factors for the contaminant of concern at the Site. No change to these assumptions or cleanup levels developed from them are needed at this time.

The future use of the FPA will change once the redevelopment is complete. As discussed earlier, the FPA is currently zoned industrial/commercial and the implemented ICs reflect that. The current owner has plans for redevelopment of the FPA for retail and residential uses. The FPA was transitioned to the Ohio VAP in order to perform the additional cleanup that is required to meet residential-use standards. It is anticipated that the FPA will be rezoned for commercial/residential uses upon completion of the additional cleanup work. The additional cleanup work will need to meet EPA's residential standards. Ohio EPA will provide EPA with documentation that all appropriate actions have been completed under its VAP. EPA will review the documentation and make a decision regarding the additional cleanup and whether it meets the required standards for residential use. EPA will need to document a remedy change in a new decision document as well as revise the ICs for the FPA.

**QUESTION C:** Has any other information come to light that could call into question the protectiveness of the remedy?

No. There has been no other information generated during the FYR review process or other information that would call into question the protectiveness of the remedy.

## VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations				
<b>OU(s) without Issues/Recommendations Identified in the Five-Year Review:</b>				
none				
<b>Issues and Recommendations Identified in the Five-Year Review:</b>				
<b>OU(s):</b>	<b>Issue Category:</b> Institutional Controls			
	<b>Issue:</b> Not all required ICs have been implemented.			
	<b>Recommendation:</b> Implement environmental covenants at all remaining parcels that need ICs. At parcels with uncooperative landowners, EPA will consider implementing informational controls (i.e., deed notices) to serve as ICs until such time as environmental covenants can be implemented.			
<b>Affect Current Protectiveness</b>	<b>Affect Future Protectiveness</b>	<b>Party Responsible</b>	<b>Oversight Party</b>	<b>Milestone Date</b>
No	Yes	PRP	EPA/State	6/30/2020

## Other Findings

In addition, the following are recommendations that were identified during the FYR, but do not affect current nor future protectiveness of the remedy:

- Trees that have been planted across the Site should be observed during the next FYR period to ensure there is growth and meet the requirements of the O&M plan.
- Continue to monitor groundwater and evaluate the data to ensure that the consolidation cell does not cause any groundwater contamination.
- EPA will continue coordination with Ohio EPA in order to follow cleanup progress in the FPA under the Ohio VAP. Upon completion of the cleanup, Ohio EPA will provide EPA with the documentation needed for EPA to assess and document any changes to the remedy resulting from the additional cleanup work.

## VII. PROTECTIVENESS STATEMENT

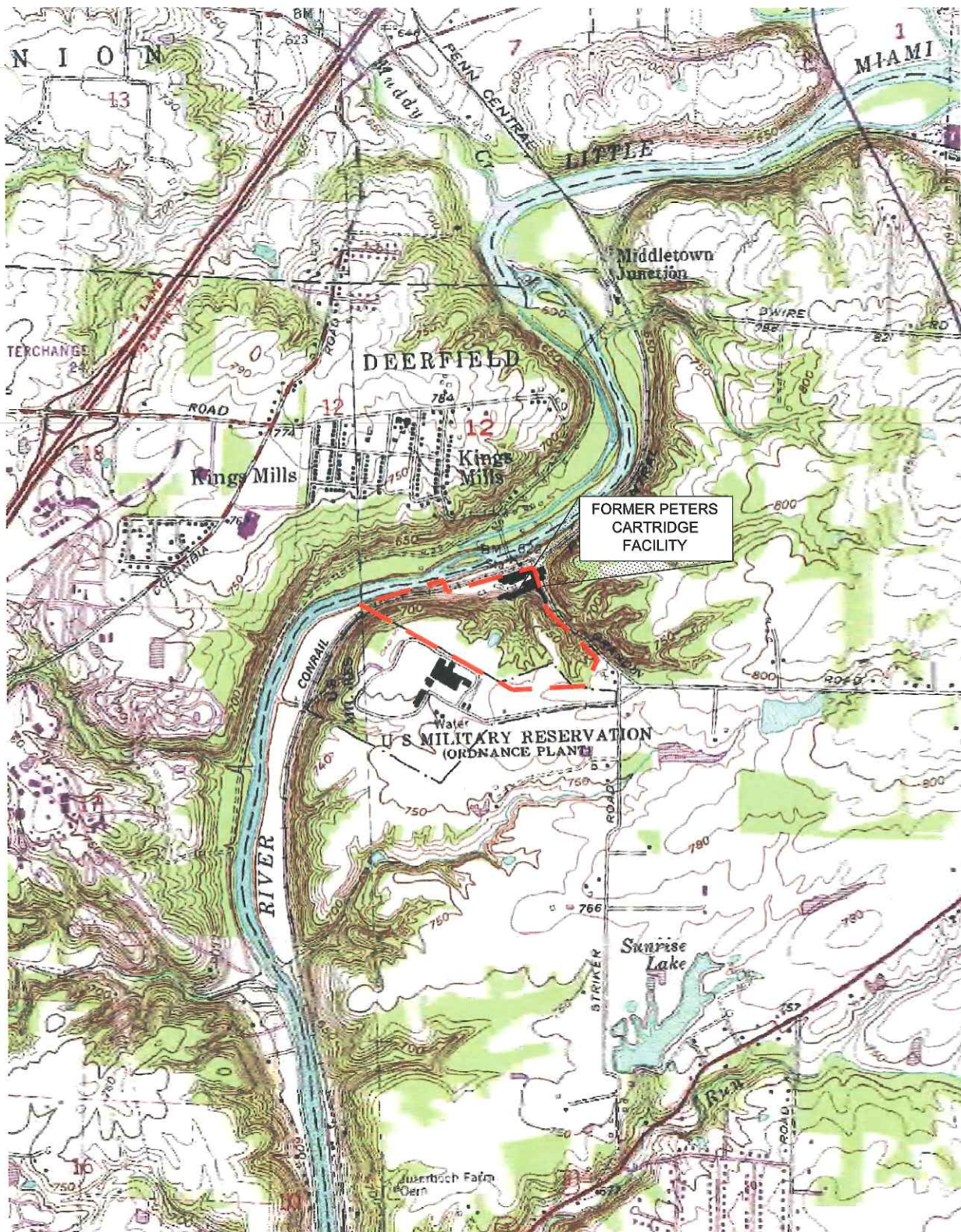
OU1 & Sitewide Protectiveness Statement	
<i>Protectiveness Determination:</i> Short-term Protective	
<i>Protectiveness Statement:</i> The remedy at the Peters Cartridge Factory Superfund Site currently protects human health and the environment because most of the components of the remedy are in place and functioning as intended. The contaminated soil has been removed and placed into an on-Site containment cell. The cover on the cell is preventing direct exposure to any contaminants and groundwater is being monitored for possible migration of contaminants from the containment cell to groundwater. However, in order for the remedy to be protective in the long term, the following action needs to be taken to ensure protectiveness: implement environmental covenants at all remaining parcels that need ICs.	

## VIII. NEXT REVIEW

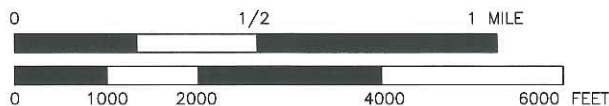
The next FYR report for the Peters Cartridge Superfund Site is required five years from the completion date of this review.

**FIGURE 1 – SITE MAP**





Latitude: N 39° 20' 55.5"  
Longitude: W 84° 14' 32.8"



USGS 7.5-Minute Topographic Map; South Lebanon, OH Quadrangle 2000; Scale: 1:24,000



FORMER PETERS CARTRIDGE FACILITY  
HAMILTON TOWNSHIP, WARREN COUNTY, OHIO

SITE LOCATION MAP

Job No. 446128  
Designed EJM  
Drawn SBM  
Checked KER  
Reviewed  
Approved  
Reg. No.  
Date 2/7/14

Issue Certification

NOT FOR  
BIDDING OR  
CONSTRUCTION

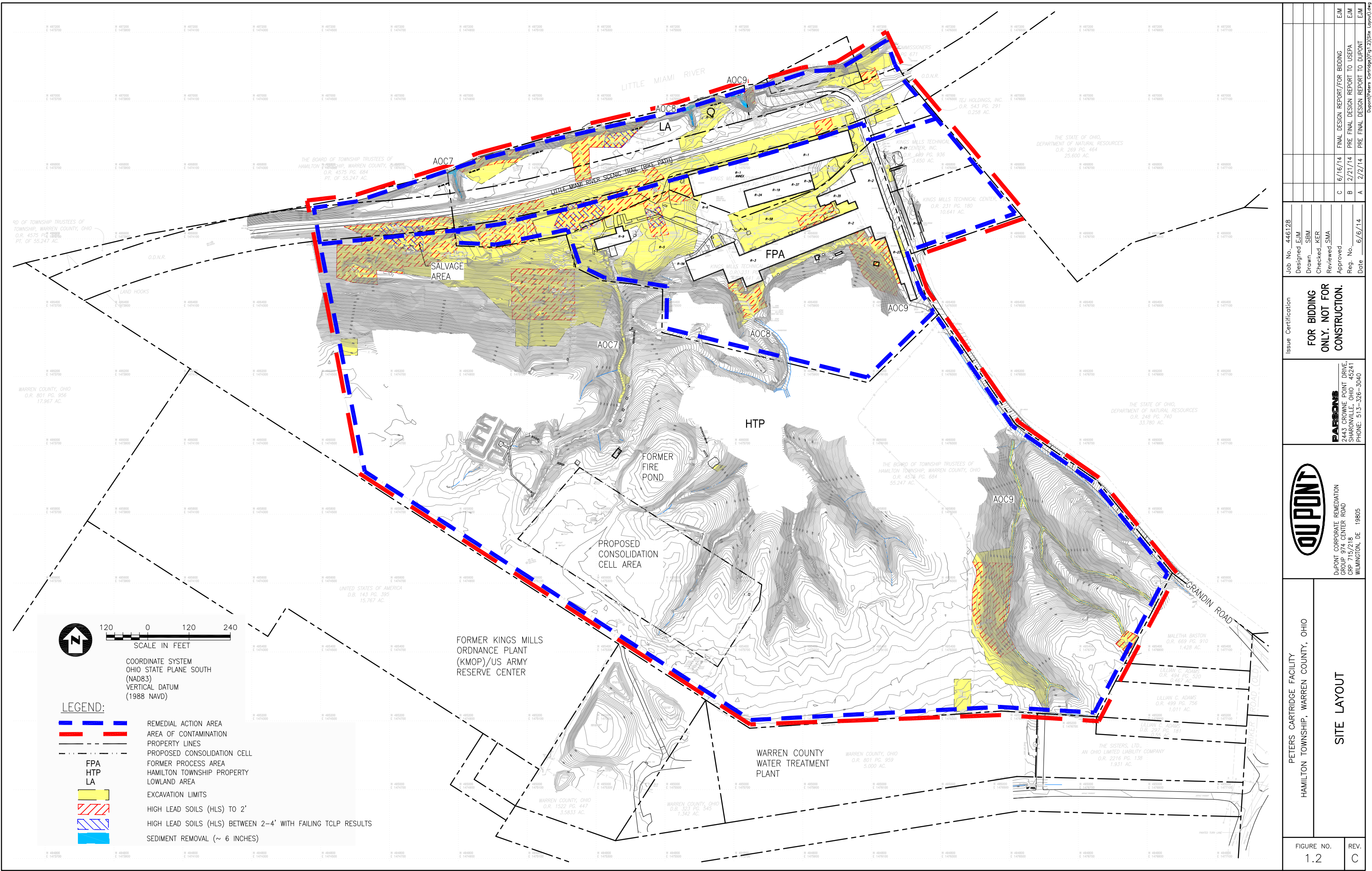
**PARSONS**  
26301 CURTISS WRIGHT PKWY  
CLEVELAND, OHIO 44143  
PHONE: 513-552-7044

FIGURE NO.  
1.1

REV.  
—

## **FIGURE 2 – HIGH LEAD AREA MAP**

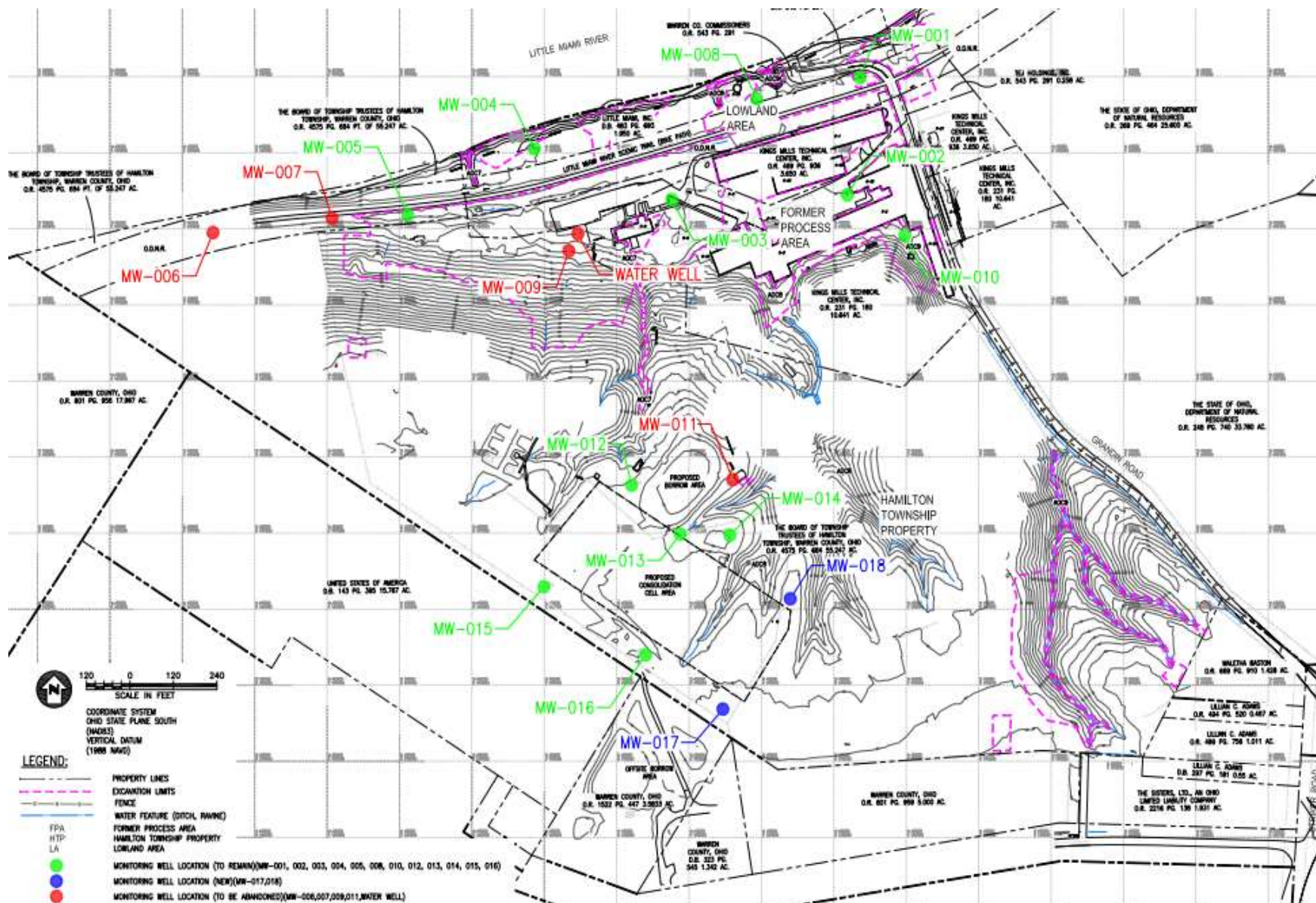




Job No. 446128		Designed EJM		Drawn SBM		Checked KER		Reviewed SMA		Approved		Reg. No.		Date 6/6/14	
Issue Certification		FOR BIDDING ONLY. NOT FOR CONSTRUCTION.										PARSONS		2443 CROWNE POINT DRIVE SHARONVILLE, OHIO 45241 PHONE: 513-326-3040	
PETERS CARTRIDGE FACILITY HAMILTON TOWNSHIP, WARREN COUNTY, OHIO		SITE LAYOUT										FIGURE NO. 1.2		REV. C	

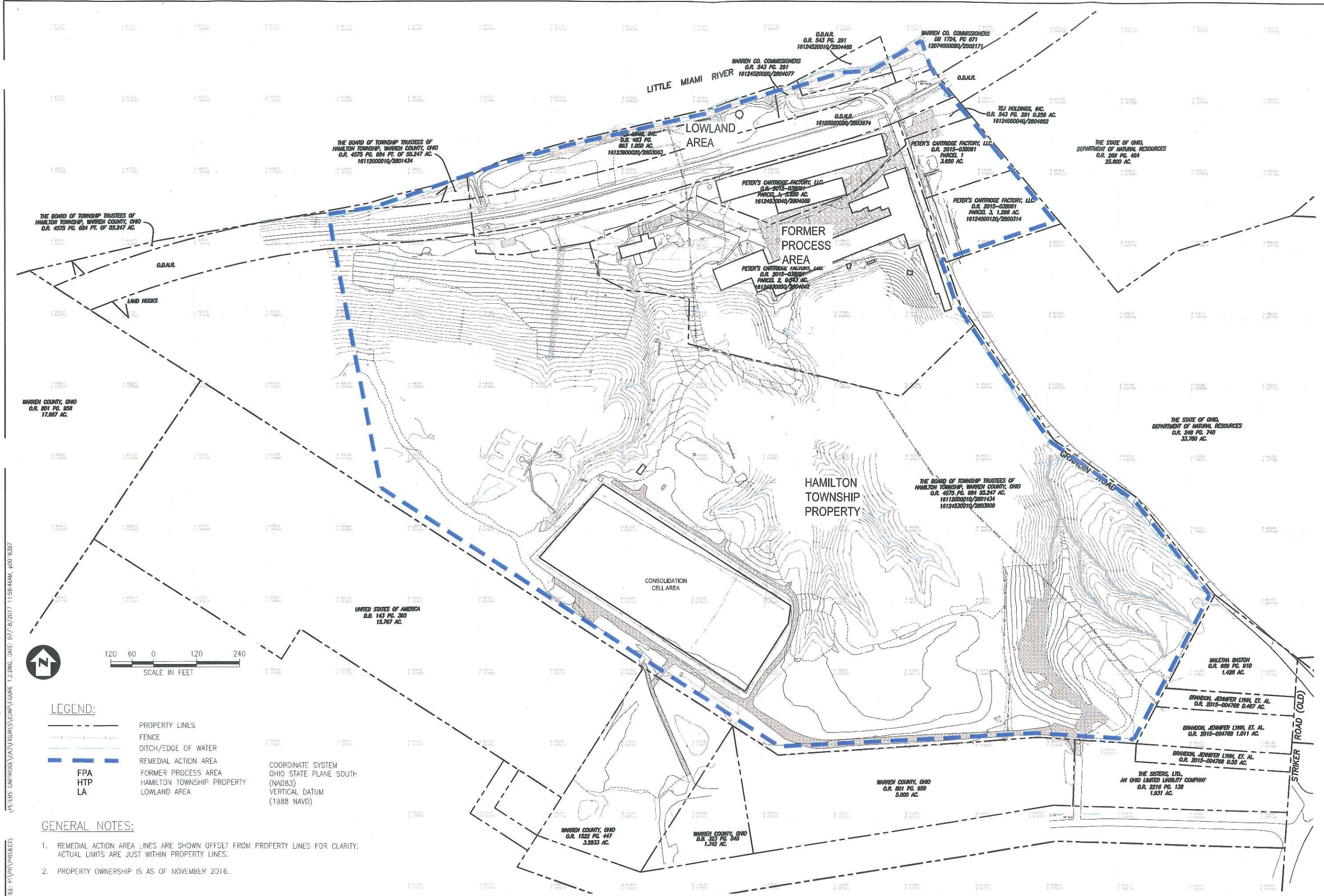
**FIGURE 3 – GROUNDWATER MONITORING WELL LOCATION MAP**





## **APPENDIX A – SITE OWNERSHIP MAP**





FILE: PAVN\PROJECTS\PETERS CARTRIDGE\COV\FIGURES\COPY\FIGURE 1.2.DWG, DATE: 07/18/2017 11:58:46AM, PLOT: 8397

Job No.: 445128	
Designed EJM	RR
Drawn	RR
Checked KER	RR
Reviewed SMA	RR
Approved	RR
Reg. No.	RR
Date	2/2/14

Issue Certification

**NOT FOR BID  
NOT FOR  
CONSTRUCTION**

**PARSONS**  
2443 CROWNE POINT DRIVE  
SHARONVILLE, OHIO 45241  
PHONE: 513-326-3040

**DUPONT**  
DUPONT CORPORATE REMEDIATION  
GROUP 974 CENTER ROAD  
CRP 715/218  
WILMINGTON, DE 19805

PETERS CARTRIDGE FACILITY  
HAMILTON TOWNSHIP, WARREN COUNTY, OHIO

**SITE OWNERSHIP PARCEL MAP**

FIGURE NO. 1.2

REV. 1

Dupont/Peters Cartridge (Fig. 1.2).dwg

## APPENDIX B – REFERENCE LIST

- Record of Decision, EPA – September 2009
- Explanation of Significant Differences, EPA – July 2015
- Operation and Maintenance Plan – Peters Cartridge Facility. Parsons. July 2017
- Institutional Control Implementation and Assurance Plan – Peters Cartridge Facility. Parsons. July 2017.
- Preliminary Design Report – Peters Cartridge Facility. Parsons. May 2013. (*Includes groundwater monitoring data from January/February 2013 sampling during pre-design investigation.*)
- Long-Term Operation, Maintenance, and Monitoring Annual Report – Peters Cartridge Facility Site. Parsons. February 2018. (*Includes groundwater monitoring data from June 2017 and November/December 2017 monitoring events.*)
- Long-Term Operation, Maintenance, and Monitoring Annual Report – Peters Cartridge Facility Site. Parsons. March 2019. (*Includes groundwater monitoring data from June 2018 and December 2018 monitoring events.*)
- Long-Term Operation, Maintenance and Monitoring R-2 Slope Repair Report – Peters Cartridge Facility Site. Parsons. March 2019

## **APPENDIX C – SITE INSPECTION CHECKLIST AND PHOTOS**



## Site Inspection Checklist

I. SITE INFORMATION											
<b>Site name:</b> Peters Cartridge	<b>Date of inspection:</b> 9/25/2019										
<b>Location and Region:</b> Kings Mille, Ohio Region 5	<b>EPA ID:</b> OHD98705183										
<b>Agency, office, or company leading the FYR:</b> USEPA	<b>Weather/temperature:</b> Sunny 75 degrees										
<p style="text-align: center;"><b>Remedy Includes:</b> (Check all that apply)</p> <table border="0"><tbody><tr><td><input checked="" type="checkbox"/> Landfill cover/containment</td><td><input type="checkbox"/> Monitored natural attenuation</td></tr><tr><td><input checked="" type="checkbox"/> Access controls</td><td><input type="checkbox"/> Groundwater containment</td></tr><tr><td><input checked="" type="checkbox"/> Institutional controls</td><td><input type="checkbox"/> Vertical barrier walls</td></tr><tr><td><input type="checkbox"/> Groundwater pump and treatment</td><td><input type="checkbox"/> Other: Click or tap here to enter text.</td></tr><tr><td><input type="checkbox"/> Surface water collection and treatment</td><td></td></tr></tbody></table>		<input checked="" type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation	<input checked="" type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment	<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls	<input type="checkbox"/> Groundwater pump and treatment	<input type="checkbox"/> Other: Click or tap here to enter text.	<input type="checkbox"/> Surface water collection and treatment	
<input checked="" type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation										
<input checked="" type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment										
<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls										
<input type="checkbox"/> Groundwater pump and treatment	<input type="checkbox"/> Other: Click or tap here to enter text.										
<input type="checkbox"/> Surface water collection and treatment											
<p style="text-align: center;"><b>Attachments:</b></p> <table border="0"><tbody><tr><td><input type="checkbox"/> Inspection team roster attached</td><td><input type="checkbox"/> Site map attached</td></tr></tbody></table>		<input type="checkbox"/> Inspection team roster attached	<input type="checkbox"/> Site map attached								
<input type="checkbox"/> Inspection team roster attached	<input type="checkbox"/> Site map attached										



## Site Inspection Checklist

II. INTERVIEWS (Check all that apply)			
1. <b>O&amp;M Site Manager</b>	<b>Eric Mysona,</b>	<b>Project Manger Parsons,</b>	<b>9/25/2019</b>
Interviewed: <input checked="" type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone   Phone Number: <a href="#">Click here to enter text.</a> Problems, suggestions: <input type="checkbox"/> Report attached <b>None</b>			
2. <b>O&amp;M Staff</b>	Name                      ,	Title                      ,	<a href="#">Click or tap to enter a date.</a>
Interviewed: <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone   Phone Number: <a href="#">Click here to enter text.</a> Problems, suggestions: <input type="checkbox"/> Report attached <a href="#">Click or tap here to enter text.</a>			
3. <b>Local regulatory authorities and response agencies</b> (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.  Agency:   Ohio EPA  Contact: Tammy McPeck, Project Manager, 9/25/2019,   P: Phone Number  Problems, suggestions: <input type="checkbox"/> Report attached  None  Agency: <a href="#">Click or tap here to enter text.</a>  Contact: Name                      , Title                      , <a href="#">Click or tap to enter a date.</a> ,   P: Phone Number  Problems, suggestions: <input type="checkbox"/> Report attached  <a href="#">Click or tap here to enter text.</a>  Agency: <a href="#">Click or tap here to enter text.</a>  Contact: Name                      , Title                      , <a href="#">Click or tap to enter a date.</a> ,   P: Phone Number  Problems, suggestions: <input type="checkbox"/> Report attached  <a href="#">Click or tap here to enter text.</a>  Agency: <a href="#">Click or tap here to enter text.</a>  Contact: Name                      , Title                      , <a href="#">Click or tap to enter a date.</a> ,   P: Phone Number  Problems, suggestions: <input type="checkbox"/> Report attached  <a href="#">Click or tap here to enter text.</a>			
4. <b>Other Interviews (optional):</b> <input type="checkbox"/> Report attached  <a href="#">Click or tap here to enter text.</a>			

## Site Inspection Checklist

<b>III. ON-SITE DOCUMENTS &amp; RECORDS VERIFIED</b> (Check all that apply)			
<b>1. O&amp;M Documents</b>			
<input type="checkbox"/> O&M manual	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> As-built drawings	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Maintenance logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: Click or tap here to enter text.			
<b>2. Site-Specific Health and Safety Plan</b>			
		<input checked="" type="checkbox"/> Readily available	
<input type="checkbox"/> Contingency Plan/Emergency Response Plan		<input type="checkbox"/> Readily available	
Remarks: Click or tap here to enter text.			
<b>3. O&amp;M and OSHA Training Records</b>			
		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
Remarks: Click or tap here to enter text.			
<b>4. Permits and Service Agreements</b>			
<input type="checkbox"/> Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Effluent discharge	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Waste disposal, POTW	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Other permits: Click or tap here to enter text.			
Remarks: Click or tap here to enter text.			
<b>5. Gas Generation Records</b>			
		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
Remarks: Click or tap here to enter text.			
<b>6. Settlement Monument Records</b>			
		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
Remarks: Click or tap here to enter text.			
<b>7. Groundwater Monitoring Records</b>			
		<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
Remarks: Click or tap here to enter text.			
<b>8. Leachate Extraction Records</b>			
		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
Remarks: Click or tap here to enter text.			

## Site Inspection Checklist

<b>9. Discharge Compliance Records</b>			
<input type="checkbox"/> Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Water (effluent)	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: Click or tap here to enter text.			
<b>10. Daily Access/Security Logs</b>			
<input type="checkbox"/> Readily available		<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: Click or tap here to enter text.			
<b>IV. O&amp;M COSTS</b>			
<b>1. O&amp;M Organization</b>			
<input type="checkbox"/> State in-house	<input type="checkbox"/> Contractor for State		
<input type="checkbox"/> PRP in-house	<input checked="" type="checkbox"/> Contractor for PRP		
<input type="checkbox"/> Federal Facility in-house	<input type="checkbox"/> Contractor for Federal Facility		
Remarks: Click or tap here to enter text.			
<b>2. O&amp;M Cost Records</b>			
<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> Funding mechanism/agreement in place	
Original O&M cost estimate Click or tap here to enter text.			<input type="checkbox"/> Breakdown attached
Total annual cost by year for review period if available			
From Click or tap to enter a date.	To Click or tap to enter a date.	Total cost Click or tap here to enter text.	<input type="checkbox"/> Breakdown attached
From Click or tap to enter a date.	To Click or tap to enter a date.	Total cost Click or tap here to enter text.	<input type="checkbox"/> Breakdown attached
From Click or tap to enter a date.	To Click or tap to enter a date.	Total cost Click or tap here to enter text.	<input type="checkbox"/> Breakdown attached
From Click or tap to enter a date.	To Click or tap to enter a date.	Total cost Click or tap here to enter text.	<input type="checkbox"/> Breakdown attached
From Click or tap to enter a date.	To Click or tap to enter a date.	Total cost Click or tap here to enter text.	<input type="checkbox"/> Breakdown attached
<b>3. Unanticipated or Unusually High O&amp;M Costs During Review Period</b>			
Describe costs and reasons:			
Click or tap here to enter text.			

## Site Inspection Checklist

V. ACCESS AND INSTITUTIONAL CONTROLS			
<input type="checkbox"/> Applicable		<input type="checkbox"/> N/A	
<b>1. Fencing Damaged</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Gates secured	<input type="checkbox"/> N/A
Remarks: Click or tap here to enter text.			
<b>2. Other Access Restrictions</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Gates secured	
Remarks: Click or tap here to enter text.			
<b>3. Institutional Controls (ICs)</b>			
<b>A. Implementation and Enforcement</b>			
Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Type of monitoring (e.g., self-reporting, drive by)	groundwater		
Frequency	annual		
Responsible party/agency	PRP		
Contact: Eric Mysona, Project Manager, Click or tap to enter a date., P: Phone Number			
Reporting is up-to-date	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Reports are verified by the lead agency	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Specific requirements in deed or decision documents have been met	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Violations have been reported	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Other problems or suggestions:			
Click or tap here to enter text.			
<b>B. Adequacy</b>	<input checked="" type="checkbox"/> ICs are adequate	<input type="checkbox"/> ICs are inadequate	<input type="checkbox"/> N/A
Remarks: Click or tap here to enter text.			
<b>4. General</b>			
<b>A. Vandalism/Trespassing</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No vandalism evident	
Remarks: Click or tap here to enter text.			
<b>B. Land use changes on site</b>	<input checked="" type="checkbox"/> N/A		
Remarks: Click or tap here to enter text.			
<b>C. Land use changes off site</b>	<input checked="" type="checkbox"/> N/A		
Remarks: Click or tap here to enter text.			

## Site Inspection Checklist

VI. GENERAL SITE CONDITIONS			
<b>1. Roads</b>	<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A	
<b>A. Roads damaged</b> <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A Remarks: Click or tap here to enter text.			
<b>B. Other Site Conditions</b> Remarks: Click or tap here to enter text.			
VII. LANDFILL COVERS			
<b>1. Landfill Surface</b>	<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A	
<b>A. Settlement (Low Spots)</b> <input type="checkbox"/> Location Shown on Site Map <input checked="" type="checkbox"/> Settlement Not Evident Areal Extent: Click or tap here to enter text.           Depth: Click or tap here to enter text. Remarks: Click or tap here to enter text.			
<b>B. Cracks</b> <input type="checkbox"/> Location Shown on Site Map <input checked="" type="checkbox"/> Cracking Not Evident Lengths: Click or tap here to enter text.           Widths: Click or tap here to enter text.           Depths: Click or tap here to enter text. Remarks: Click or tap here to enter text.			
<b>C. Erosion</b> <input type="checkbox"/> Location Shown on Site Map <input checked="" type="checkbox"/> Erosion Not Evident Areal Extent: Click or tap here to enter text.           Depth: Click or tap here to enter text. Remarks: Click or tap here to enter text.			
<b>D. Holes</b> <input type="checkbox"/> Location Shown on Site Map <input checked="" type="checkbox"/> Holes Not Evident Areal Extent: Click or tap here to enter text.           Depth: Click or tap here to enter text. Remarks: Click or tap here to enter text.			
<b>E. Vegetative Cover</b> <input checked="" type="checkbox"/> Grass <input type="checkbox"/> Tress/Shrubs (indicate size and locations on a diagram) <input checked="" type="checkbox"/> Cover Properly Established <input checked="" type="checkbox"/> No Signs of Stress Remarks: Click or tap here to enter text.			
<b>F. Alternative Cover (armored rock, concrete, etc.)</b> <input checked="" type="checkbox"/> N/A Remarks: Click or tap here to enter text.			
<b>G. Bulges</b> <input type="checkbox"/> Location Shown on Site Map <input checked="" type="checkbox"/> Bulges Not Evident Areal Extent: Click or tap here to enter text.           Height: Click or tap here to enter text. Remarks: Click or tap here to enter text.			
<b>H. Wet Areas/Water Damage</b> <input checked="" type="checkbox"/> Wet Areas/Water Damage Not Evident			

## Site Inspection Checklist

<input type="checkbox"/> Wet Areas	<input type="checkbox"/> Location Shown on Site Map	Areal Extent: Click or tap here to enter text.
<input type="checkbox"/> Ponding	<input type="checkbox"/> Location Shown on Site Map	Areal Extent: Click or tap here to enter text.
<input type="checkbox"/> Seeps	<input type="checkbox"/> Location Shown on Site Map	Areal Extent: Click or tap here to enter text.
<input type="checkbox"/> Soft Subgrade	<input type="checkbox"/> Location Shown on Site Map	Areal Extent: Click or tap here to enter text.
Remarks: Click or tap here to enter text.		
<b>I. Slope Instability</b>	<input type="checkbox"/> Location Shown on Site Map  <input type="checkbox"/> Slides	<input checked="" type="checkbox"/> Slope Instability Not Evident  Areal Extent: Click or tap here to enter text.
Remarks: Click or tap here to enter text.		
<b>2. Benches</b> <div style="float: right; text-align: right;"> <input type="checkbox"/> Applicable         <input checked="" type="checkbox"/> N/A       </div> <p>(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)</p>		
<b>A. Flows Bypass Bench</b>	<input type="checkbox"/> Location Shown on Site Map	<input type="checkbox"/> N/A or Okay
Remarks: Click or tap here to enter text.		
<b>B. Bench Breached</b>	<input type="checkbox"/> Location Shown on Site Map	<input type="checkbox"/> N/A or Okay
Remarks: Click or tap here to enter text.		
<b>C. Bench Overtopped</b>	<input type="checkbox"/> Location Shown on Site Map	<input type="checkbox"/> N/A or Okay
Remarks: Click or tap here to enter text.		
<b>3. Letdown Channels</b> <div style="float: right; text-align: right;"> <input type="checkbox"/> Applicable         <input checked="" type="checkbox"/> N/A       </div> <p>(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)</p>		
<b>A. Settlement</b>	<input type="checkbox"/> Location Shown on Site Map	<input type="checkbox"/> Settlement Not Evident
Areal Extent: Click or tap here to enter text.		Depth: Click or tap here to enter text.
Remarks: Click or tap here to enter text.		
<b>B. Material Degradation</b>	<input type="checkbox"/> Location Shown on Site Map	<input type="checkbox"/> Degradation Not Evident
Material Type: Click or tap here to enter text.		Areal Extent: Click or tap here to enter text.
Remarks: Click or tap here to enter text.		
<b>C. Erosion</b>	<input type="checkbox"/> Location Shown on Site Map	<input type="checkbox"/> Erosion Not Evident

## Site Inspection Checklist

Areal Extent: Click or tap here to enter text. Remarks: Click or tap here to enter text.	Depth: Click or tap here to enter text.
<b>D. Undercutting</b> <input type="checkbox"/> Location Shown on Site Map <span style="float: right;"><input type="checkbox"/> Undercutting Not Evident</span> Areal Extent: Click or tap here to enter text. <span style="float: right;">Depth: Click or tap here to enter text.</span> Remarks: Click or tap here to enter text.	
<b>E. Obstructions</b> <input type="checkbox"/> Location Shown on Site Map <span style="float: right;"><input type="checkbox"/> Undercutting Not Evident</span> Type: Click or tap here to enter text. Areal Extent: Click or tap here to enter text. <span style="float: right;">Size: Click or tap here to enter text.</span> Remarks: Click or tap here to enter text.	
<b>F. Excessive Vegetative Growth</b> <input type="checkbox"/> Location Shown on Site Map <span style="float: right;"><input type="checkbox"/> Excessive Growth Not Evident</span> Areal Extent: Click or tap here to enter text. <span style="float: right;"><input type="checkbox"/> Vegetation in channels does not obstruct flow</span> Remarks: Click or tap here to enter text.	
<b>4. Cover Penetrations</b> <input type="checkbox"/> Applicable <span style="float: right;"><input checked="" type="checkbox"/> N/A</span>	
<b>A. Gas Vents</b> <input type="checkbox"/> Active <span style="float: right;"><input type="checkbox"/> Passive</span> <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> Properly secured/locked  <input type="checkbox"/> Good condition  <input type="checkbox"/> Needs Maintenance         </div> <div> <input type="checkbox"/> Functioning  <input type="checkbox"/> Evidence of leakage at penetration  <input type="checkbox"/> N/A         </div> <div> <input type="checkbox"/> Routinely sampled         </div> </div> Remarks: Click or tap here to enter text.	
<b>B. Gas Monitoring Probes</b> <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> Properly secured/locked  <input type="checkbox"/> Good condition  <input type="checkbox"/> Needs Maintenance         </div> <div> <input type="checkbox"/> Functioning  <input type="checkbox"/> Evidence of leakage at penetration  <input type="checkbox"/> N/A         </div> <div> <input type="checkbox"/> Routinely sampled         </div> </div> Remarks: Click or tap here to enter text.	
<b>C. Monitoring Wells</b> <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> Properly secured/locked  <input type="checkbox"/> Good condition  <input type="checkbox"/> Needs Maintenance         </div> <div> <input type="checkbox"/> Functioning  <input type="checkbox"/> Evidence of leakage at penetration  <input type="checkbox"/> N/A         </div> <div> <input type="checkbox"/> Routinely sampled         </div> </div> Remarks: Click or tap here to enter text.	
<b>D. Leachate Extraction Wells</b>	

## Site Inspection Checklist

<input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks: <a href="#">Click or tap here to enter text.</a>	<input type="checkbox"/> Functioning <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> N/A
<b>E. Settlement Monuments</b> <input type="checkbox"/> Located <input type="checkbox"/> Routinely Surveyed <input type="checkbox"/> N/A Remarks: <a href="#">Click or tap here to enter text.</a>	
<b>5. Gas Collection and Treatment</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
<b>A. Gas Treatment Facilities</b> <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal Destruction <input type="checkbox"/> Collection for Reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks: <a href="#">Click or tap here to enter text.</a>	
<b>B. Gas Collection Wells, Manifolds, and Piping</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks: <a href="#">Click or tap here to enter text.</a>	
<b>C. Gas Monitoring Facilities (e.g. gas monitoring of adjacent homes or buildings)</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks: <a href="#">Click or tap here to enter text.</a>	
<b>6. Cover Drainage Layer</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
<b>A. Outlet Pipes Inspected</b> <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks: <a href="#">Click or tap here to enter text.</a>	
<b>B. Outlet Rock Inspected</b> <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks: <a href="#">Click or tap here to enter text.</a>	
<b>7. Detention/Sediment Ponds</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
<b>A. Siltation</b> <input type="checkbox"/> Siltation Not Evident <input type="checkbox"/> N/A Areal Extent: <a href="#">Click or tap here to enter text.</a> Depth: <a href="#">Click or tap here to enter text.</a> Remarks: <a href="#">Click or tap here to enter text.</a>	
<b>B. Erosion</b> <input type="checkbox"/> Erosion Not Evident Areal Extent: <a href="#">Click or tap here to enter text.</a> Depth: <a href="#">Click or tap here to enter text.</a> Remarks: <a href="#">Click or tap here to enter text.</a>	
<b>C. Outlet Works</b> <input type="checkbox"/> Functioning <input type="checkbox"/> N/A	



## Site Inspection Checklist

Remarks: Click or tap here to enter text.		
<b>D. Dam</b> <input type="checkbox"/> Functioning <span style="float: right;"><input type="checkbox"/> N/A</span>		
Remarks: Click or tap here to enter text.		
<b>8. Retaining Walls</b>	<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
<b>A. Deformations</b> <input type="checkbox"/> Location Shown on Site Map <span style="float: right;"><input type="checkbox"/> Deformation Not Evident</span>		
Horizontal Displacement: Click or tap here to enter text.		
Vertical Displacement: Click or tap here to enter text.		
Rotational Displacement: Click or tap here to enter text.		
Remarks: Click or tap here to enter text.		
<b>B. Degradation</b> <input type="checkbox"/> Location Shown on Site Map <span style="float: right;"><input type="checkbox"/> Deformation Not Evident</span>		
Remarks: Click or tap here to enter text.		
<b>9. Perimeter Ditches/Off-Site Discharge</b>	<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
<b>A. Siltation</b> <input type="checkbox"/> Location Shown on Site Map <span style="float: right;"><input type="checkbox"/> Siltation Not Evident</span>		
Areal Extent: Click or tap here to enter text.		
Depth: Click or tap here to enter text.		
Remarks: Click or tap here to enter text.		
<b>B. Vegetative Growth</b> <input type="checkbox"/> Location Shown on Site Map <span style="float: right;"><input type="checkbox"/> N/A</span>		
<input type="checkbox"/> Vegetation Does Not Impede Flow		
Areal Extent: Click or tap here to enter text.		
Type: Click or tap here to enter text.		
Remarks: Click or tap here to enter text.		
<b>C. Erosion</b> <input type="checkbox"/> Location Shown on Site Map <span style="float: right;"><input type="checkbox"/> Erosion Not Evident</span>		
Areal Extent: Click or tap here to enter text.		
Depth: Click or tap here to enter text.		
Remarks: Click or tap here to enter text.		
<b>D. Discharge Structure</b> <input type="checkbox"/> Functioning <span style="float: right;"><input type="checkbox"/> N/A</span>		
Remarks: Click or tap here to enter text.		
<b>VIII. VERTICAL BARRIER WALLS</b>		
<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A	
<b>1. Settlement</b> <input type="checkbox"/> Location Shown on Site Map <span style="float: right;"><input type="checkbox"/> Settlement Not Evident</span>		
Areal Extent: Click or tap here to enter text.		
Depth: Click or tap here to enter text.		
Remarks: Click or tap here to enter text.		
<b>2. Performance Monitoring</b> Type of Monitoring: Click or tap here to enter text.		

## Site Inspection Checklist

<input type="checkbox"/> Performance Not Monitored Frequency: Click or tap here to enter text. Remarks: Click or tap here to enter text.	<input type="checkbox"/> Evidence of Breaching Head Differential: Click or tap here to enter text.
<b>IX. GROUNDWATER/SURFACE WATER REMEDIES</b>	
<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
<b>1. Groundwater Extraction Wells, Pumps, and Pipelines</b> <span style="float: right;"><input type="checkbox"/> Applicable    <input type="checkbox"/> N/A</span>	
<b>A. Pumps, Wellhead Plumbing, and Electrical</b> <span style="float: right;"><input type="checkbox"/> N/A</span>	
<input type="checkbox"/> Good Condition <input type="checkbox"/> All Required Wells Properly Operating <input type="checkbox"/> Needs Maintenance Remarks: Click or tap here to enter text.	
<b>B. Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b>	
<input type="checkbox"/> Good Condition <input type="checkbox"/> Needs Maintenance Remarks: Click or tap here to enter text.	
<b>C. Spare Parts and Equipment</b> <span style="float: right;"><input type="checkbox"/> Needs to be Provided</span>	
<input type="checkbox"/> Readily Available <input type="checkbox"/> Good Condition <input type="checkbox"/> Requires Upgrade Remarks: Click or tap here to enter text.	
<b>2. Surface Water Collection Structures, Pumps, and Pipelines</b> <span style="float: right;"><input type="checkbox"/> Applicable    <input type="checkbox"/> N/A</span>	
<b>A. Collection Structures, Pumps, and Electrical</b>	
<input type="checkbox"/> Good Condition <input type="checkbox"/> Needs Maintenance Remarks: Click or tap here to enter text.	
<b>B. Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b>	
<input type="checkbox"/> Good Condition <input type="checkbox"/> Needs Maintenance Remarks: Click or tap here to enter text.	
<b>C. Spare Parts and Equipment</b> <span style="float: right;"><input type="checkbox"/> Needs to be Provided</span>	
<input type="checkbox"/> Readily Available <input type="checkbox"/> Good Condition <input type="checkbox"/> Requires Upgrade Remarks: Click or tap here to enter text.	
<b>3. Treatment System</b> <span style="float: right;"><input type="checkbox"/> Applicable    <input type="checkbox"/> N/A</span>	
<b>A. Treatment Train (Check components that apply)</b>	
<input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/Water Separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air Stripping <input type="checkbox"/> Carbon Absorbers <input type="checkbox"/> Filters Click or tap here to enter text.	

## Site Inspection Checklist

- ☐ Additive (e.g. chelation agent, flocculent) Click or tap here to enter text.
- ☐ Others Click or tap here to enter text.
- ☐ Good Condition ☐ Needs Maintenance
- ☐ Sampling ports properly marked and functional
- ☐ Sampling/maintenance log displayed and up to date
- ☐ Equipment properly identified
- ☐ Quantity of groundwater treated annually Click or tap here to enter text.
- ☐ Quantity of surface water treated annually Click or tap here to enter text.
- Remarks: Click or tap here to enter text.

### B. Electrical Enclosures and Panels (properly rated and functional)

- ☐ N/A ☐ Good Condition ☐ Needs Maintenance
- Remarks: Click or tap here to enter text.

### C. Tanks, Vaults, Storage Vessels

- ☐ N/A ☐ Good Condition ☐ Needs Maintenance
- ☐ Proper Secondary Containment ☐ Good Condition ☐ Needs Maintenance
- Remarks: Click or tap here to enter text.

### D. Discharge Structure and Appurtenances

- ☐ N/A ☐ Good Condition ☐ Needs Maintenance
- Remarks: Click or tap here to enter text.

### E. Treatment Building(s)

- ☐ N/A ☐ Good condition (esp. roof and doorways)
- ☐ Needs repair ☐ Chemicals and equipment properly stored
- Remarks Click or tap here to enter text.

### F. Monitoring Wells (Pump and Treatment Remedy)

- ☐ N/A ☐ Functioning
- ☐ Properly secured/locked ☐ All required wells located
- ☐ Routinely sampled ☐ Needs Maintenance
- ☐ Good condition
- Remarks Click or tap here to enter text.

## 4. Monitoring Data

### A. Monitoring Data:

- ☐ Is Routinely Submitted on Time ☐ Is of Acceptable Quality

## Site Inspection Checklist

<b>B. Monitoring Data Suggests:</b> <input type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining
<b>5. Monitored Natural Attenuation</b>
<div style="display: flex; justify-content: space-between;"> <div> <b>A. Monitoring Wells (natural attenuation remedy)</b>  <input type="checkbox"/> Properly secured/locked      <input type="checkbox"/> Functioning  <input type="checkbox"/> All required wells located      <input type="checkbox"/> Needs Maintenance         </div> <div style="text-align: right;"> <input type="checkbox"/> N/A  <input type="checkbox"/> Routinely sampled  <input type="checkbox"/> Good condition         </div> </div> <p>Remarks: <a href="#">Click or tap here to enter text.</a></p>
<b>X. OTHER REMEDIES</b>
<p>If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.</p>
<b>XI. OVERALL OBSERVATIONS</b>
<b>1. Implementation of the Remedy</b>  <p>Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).</p> <p>Cover is intact and is properly vegetated. Remedy is functioning as designed.</p>
<b>2. Adequacy of O&amp;M</b>  <p>Describe issues and observations related to the implementation and scope of O&amp;M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.</p> <p>There are no issues related to the implementation of the O&amp;M</p>
<b>3. Early Indicators of Potential Remedy Problems</b>  <p>Describe issues and observations such as unexpected changes in the cost or scope of O&amp;M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.</p> <p>None</p>
<b>4. Early Indicators of Potential Remedy Problems</b>  <p>Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.</p> <p><a href="#">Click or tap here to enter text.</a></p>



Photo of abandoned buildings on Peters Cartridge site





Photo of former buildings on Peters Cartridge Site taken from bike trail





Photo of log erosion controls and vegetative matting along Little Miami River





Photo of rocked drain area at bottom of slope with entry to drain





Photo of Former Process Area which is being redeveloped for residential/commercial





Photo of drainage channel along a steep revegetated slope and sapling trees in protective tube





Photo of drainage channel down steep slope





Photo of monitoring well around containment cell





Photo of top of containment cell and vegetative grasses across the cover





Photo across cover of containment cell and vegetation

